

PATENT

Atty. Dkt. No. SAR 13985

**REMARKS**

This is intended as a full and complete response to the Office Action dated May 24, 2004, having a shortened statutory period for response set to expire on August 24, 2004. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1 - 20 remain pending in the application and are shown above. Claims 12 - 14 stand rejected and claims 1 - 11 and 17 - 20 are indicated to be allowable by the Examiner. Claims 15 and 16 were objected to by the Examiner. Reconsideration of the rejected claims is requested for reasons presented below.

**I. Rejection of Claims 12 and 13 under 35 U.S.C. § 102**

Claims 12 and 13 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Bertonis et al. (US 6,625,222, issued September 23, 2003). Applicants respectfully traverse the rejection.

Bertonis discloses an apparatus and method for providing high-speed wireless upstream data transmission using cable-compatible modems. The data is modulated by a cable-compatible modem and upconverted to a wireless channel by a frequency translator. The average field strength of the transmitted signal is constrained by controlling the duty cycle, and may be more accurately constrained by additionally controlling the gain of the frequency translator through feedback. Limiting the average field strength permits transmission over unlicensed wireless channels. (Bertonis, Abstract)

The Examiner cites FIG. 8 of Bertonis as anticipating Applicants' claim 12. The Examiner's attention is directed to the fact that Bertonis fails to disclose commutating circuitry for commutating said LO inputs of said first mixer and said second mixer between in-phase and quadrature phases, as positively claimed by the Applicants. Specifically, Applicants' independent claim 12 positively recites:

12. An image-reject mixer comprising  
a first mixer having a first filter and a local oscillator (LO) input;  
a second mixer having a second filter and a LO input; and

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commutating circuitry for commutating said LO inputs of said first mixer and said second mixer between in-phase and quadrature phases. (emphasis added)

The Applicants' invention discloses a method and apparatus for providing an image-reject mixer capable of complete image rejection in the presence of amplitude and phase mismatches. In one embodiment, the commutating image-reject mixer comprises a single mixing branch. The single mixing branch comprises a first stage mixer and filter and a second stage mixer and filter. The output of the second stage filter is modulated by the commutation frequency, which cancels the image component and passes the desired component.

In contrast, Bertonis, teaches that the wireless upstream signal is received at the antenna 80, filtered by the RF filter 99, and amplified by the low-noise amplifier 81. The image-reject mixers 90 and 91 multiply the upstream wireless signal by the sine and cosine of the desired downstream center frequency, respectively. The resulting downconverted in-phase and quadrature-phase signal components are then low-pass filtered by filters 93 and 94. The quadrature-phase signal component is then shifted by either -90 degrees or +90 degrees, depending on whether the upper sideband or lower sideband is selected by the decision logic 98. (emphasis added) The resultant signal is then added to the downconverted, filtered in-phase component using adder 96. The summed signal is filtered by filter 97, amplified by amplifier 101, and output to the CMTS 20. (See Bertonis, col. 9, lines 54-67)

The Examiner argued that in phase and quadrature signal components are at filters 93-94 but the Examiner failed to show that Bertonis teaches commutating circuitry for commutating said LO inputs of said first mixer and said second mixer between in-phase and quadrature phases. Bertonis only discloses shifting the quadrature-phase signal component by either -90 degrees or +90 degrees depending on whether the upper sideband or lower sideband is selected by the decision logic 98. Bertonis is completely devoid of any teaching about shifting the in-phase signal. In other words, at best, Bertonis is shifting an input of one of the mixers and not both mixers as claimed by Applicants. Bertonis clearly does not teach what is claimed in claim 12.

Therefore, the Applicants submit that claim 12, as it now stands, fully satisfies the requirements of 35 U.S.C. §102 and is patentable thereunder. Claim 13 is patentable at

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least by virtue of depending from claim 12. Withdrawal of the rejection is respectfully requested.

## **II. Rejection of Claim 14 under 35 U.S.C. § 103**

Claim 14 stands rejected under 35 U.S.C. § 103 as being obvious over Bertonis. The Applicants respectfully disagree.

The Examiner concedes that Bertonis fails to disclose that said clock signals are waveforms selected from the group consisting of square waves and pseudo-random digital signals (Office Action, Section 3, lines 3-5) and takes Official Notice to cure this deficiency. As argued above in Section I., Applicants assert that Bertonis fails to teach or suggest commutating circuitry for commutating said LO inputs of said first mixer and said second mixer between in-phase and quadrature phases.

The Examiner's use of Official Notice fails to cure the deficiencies of Bertonis. Thus, the Examiner has failed to present a prima facie case of obviousness in taking Official Notice in view of Bertonis to arrive at the claimed invention of Applicants' claim 14. Therefore, the Applicants submit that claim 14 as it now stands, fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Withdrawal of the rejection is respectfully requested.

## **III. Allowable Subject Matter**

Applicants thank the Examiner for allowing claims 1-11 and 17-20. Applicants also thank the Examiner for indicating allowable subject matter in claims 15 and 16.

Claims 15 and 16 were objected to as being allowable but depending from a rejected base claim. Applicants thank the Examiner for indicating the conditional allowability of such subject matter, but have hereinabove provided arguments refuting the rejections of the independent claim. Thus, no changes to the dependent claims are made at this time.

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**Conclusion**

Thus, the Applicants submit that all of these claims now fully satisfy the requirements of 35 U.S.C. §102 and 35 U.S.C. §103. Consequently, the Applicants believe that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring the issuance of a final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Thomas Bethea, Jr., Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

8/24/04  
Date

  
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